

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A method for forming an arrangement of two barrier layers on a substrate, comprising:

forming a first ceramic barrier layer on the substrate, wherein the first ceramic barrier layer has a first surface and a second surface and the first surface is closer to the substrate than the second surface;

modifying at least a portion of the second surface of the first ceramic barrier layer such that the second surface of the first ceramic barrier layer comprises a material different from the material of the first ceramic barrier layer below the second surface to introduce first nucleation sites on the second surface; and

forming a second ceramic barrier layer directly on the second surface of the first ceramic barrier layer without continuing all defects of the first ceramic barrier layer, wherein the second ceramic barrier layer is initiated at the first nucleation sites;

wherein the first ceramic barrier layer and the second ceramic barrier layer together have enhanced barrier capabilities against gas and liquid as compared to two similar adjacent ceramic barrier layers formed without the modifying step to introduce nucleation sites.

2. (Original) The method of claim 1, wherein:
modifying at least a portion of the second surface of the first ceramic barrier layer includes chemically modifying the second surface.

3. (Previously Presented) The method of claim 2, wherein:

chemically modifying at least a portion of the second surface of the first ceramic barrier layer includes at least one modification technique from the group consisting of acid treatment, base treatment, exposure to water vapor, plasma treatment and ozone treatment.

4. (Withdrawn) The method of claim 1, wherein:
modifying at least a portion of the second surface of the first ceramic barrier layer includes mechanically modifying the second surface.

5. (Withdrawn) The method of claim 4, wherein:
mechanically modifying at least a portion of the second surface of the first ceramic barrier layer includes at least one modification technique from the group consisting of ion milling, nano-grinding, melting the second surface with a laser and tempering.

6. (Original) The method of claim 1, wherein:
modifying at least a portion of the second surface of the first ceramic barrier layer includes forming a nucleation promoting material on the second surface.

7. (Original) The method of claim 1, wherein:
forming a nucleation promoting material on at least a portion of the second surface of the first ceramic barrier layer includes forming at least one material from the group consisting of a metal, a metal nitride and a metal oxide.

8. (Withdrawn) The method of claim 7, wherein:
forming the at least one material includes applying a material with a critical nucleus of one atom.

9. (Withdrawn) The method of claim 8, wherein:
forming the at least one material includes applying at least one material from the group consisting of tantalum, chromium, tungsten, molybdenum, and niobium.

10. (Original) The method of claim 7, wherein:
applying the at least one material includes applying a material with a critical nucleus of one molecule.
11. (Previously Presented) The method of claim 10, wherein:
forming at least one material includes applying at least one of the materials from the group consisting of tantalum nitride, titanium nitride, tantalum oxide and titanium oxide.
12. (Original) The method of claim 1, wherein:
forming a first ceramic barrier layer and a second ceramic barrier layer includes forming the first and second ceramic barrier layers of at least one material from the group consisting of a metal nitride, a metal oxide and a metal oxynitride.
13. (Original) The method of claim 12, wherein:
the metal is aluminum.
14. (Previously Presented) The method of claim 1, wherein:
forming a first ceramic barrier layer and a second ceramic barrier layer includes forming the first and second ceramic barrier layers of at least one material from the group consisting of silicon nitride, silicon oxide and silicon oxynitride.
15. (Original) The method of claim 1, wherein:
forming a second ceramic barrier layer includes depositing the second ceramic barrier layer using chemical vapor deposition.
16. (Withdrawn) The method of claim 1, wherein:
forming a second ceramic barrier layer includes depositing the second ceramic barrier layer using physical vapor deposition.

17. (Original) The method of claim 1, wherein:

forming the first ceramic barrier layer includes at least one technique selected from the group consisting of laminating, printing, sputtering, spraying, chemical vapor deposition and physical vapor deposition.

18. (Original) The method of claim 1, wherein:

the substrate includes a flexible transparent substrate.

19. (Original) The method of claim 1, wherein the second ceramic barrier layer has a first surface and a second surface and the first surface of the second ceramic barrier layer is closer than the second surface to the first ceramic barrier layer, the method further comprising:

modifying at least a portion of the second surface to introduce second nucleation sites on the second surface of the second ceramic barrier layer; and

forming a third ceramic barrier layer on the second ceramic barrier layer, wherein the third ceramic barrier layer is initiated at the second nucleation sites.

20. (Original) The method of claim 1, wherein:

forming a first ceramic barrier layer includes forming the layer to be between about 1 and about 250 nanometers thick.

21. (Original) The method of claim 1, wherein:

forming a second ceramic barrier layer includes forming the layer to be between about 1 and about 250 nanometers thick.

22. (Original) The method of claim 1, wherein:

forming a first ceramic barrier layer includes forming the layer to be between about 10 and about 100 nanometers thick.

23. (Original) The method of claim 1, wherein:
forming a second ceramic barrier layer includes forming the layer to be between about 10 and about 100 nanometers thick.

24. (Original) The method of claim 1, further comprising:
forming an organic electrical device on the second ceramic barrier layer.

25. (Original) The method of claim 1, further comprising:
forming a first electrically conductive layer on the second ceramic barrier layer;
forming a functional organic layer on the first electrically conductive layer; and
forming a second electrically conductive layer on the functional organic layer.

26. (Original) The method of claim 25, further comprising:
forming an encapsulation over the second electrically conductive layer such that the functional organic layer is sealed from the environment by the encapsulation.

27. (Previously Presented) The method of claim 26, wherein forming an encapsulation comprises:
forming a third ceramic barrier layer over the second electrically conductive layer, wherein the third ceramic barrier layer has a first surface and a second surface and the first surface is closer than the second surface to the second electrically conductive layer;
modifying the second surface of the third ceramic barrier layer to introduce third nucleation sites on the surface of the third ceramic barrier layer; and
forming a fourth ceramic barrier layer on the third ceramic barrier layer, wherein the fourth ceramic barrier layer is initiated at the third nucleation sites.

28. (New) The method of claim 1, wherein:
the nucleation sites introduced on the second surface consist of a material different from material of the first ceramic barrier layer.

29. (New) The method of claim 1, wherein:

the nucleation sites introduced on the second surface are obtained by a reaction of the second surface with an added chemical reagent or by the addition of a nucleation-promoting material.

30. (New) The method of claim 29, wherein:

the chemical reagent is selected from the group consisting of bases, acids, water vapor, ozone or oxidation agents.

31. (New) The method of claim 1, wherein:

the material of the added nucleation promoting material is different from the material of the first ceramic barrier layer.